

What is claimed is:

1. A micro pump device for dispensing proportioned quantities of medical fluid by applying pulsed pressure on syringe's plunger stem containing the medical fluid which is injected through syringe-tube connector to the patient's body, said device comprised of:
 - a vertically expending actuator means for applying pressure at the direction of the syringe plunger wherein the actuator activation is controlled by a programmable logic means;
 - a stopper element for preventing the actuator movement in the opposite direction;
 - plunger stem holder for preventing the plunger's movement back toward the actuator;
 - guiding walls for applying pressure on the plunger stem holder;
 - power mechanism causing gradual movement of the stopper toward the actuator.
2. The device of claim 1 wherein the power mechanism is a mechanical spring.
3. The device of claim 1 wherein the actuator is piezoelectric element which expends in the direction of the plunger stem upon receiving electrical current.
4. The device of claim 2 wherein the actuator is an electromagnetic actuator.

5. The device of claim 2 wherein the power mechanism is an electric motor which is controlled by programmable logic means and the stopper element is a nut lever connected to a screwing nut which is screwed along a lead screw, said lead screw is rotated by the electric motor.
6. The device of claim 2 further comprising a second actuator, wherein the stopper element is comprised of two cylinders elements which apply pressure on the guiding walls and are connected by a second actuator, wherein said second actuator contracts in reaction to given pulses, pulling the cylinder elements toward each other, decreasing the pressure on the guiding walls and enabling the spring to pull the stopper element toward the actuator, wherein the given pulses are controlled by programmable logic means.
7. The device of claim 4 wherein the second actuator is a Shape Memory Alloy actuator
8. The device of claim 4 wherein the stopper further comprises an internal spring wherein the internal spring is situated in between the cylindrical elements applying pressure thereof.
9. The device of claim 1 further comprising supporting springs applying outside pressure on the guiding walls.
10. The device of claim 1 wherein the programmable logic means is a microprocessor controller which coordinates the operation of the power means and of the actuator in accordance with predefined parameters determined by the user and further alerts the user of malfunctions.

11. The device of claim 1 further comprising optical linear encoder and force sensor resistor for measuring changes in the movement of the plunger and the pressure within the syringe wherein said measurements are compared against defined plan values and analyzed for providing the controller input data as for monitoring the operation status.
12. The device of claim 1 wherein the device housing is watertight.
13. The device of claim 1 further comprising communication means for communicating with a remote control unit.
14. The device of claim 1 wherein the medical fluid is insulin.
15. The device of claim 1 wherein the stopper can be manually adjusted to its initial position.
16. The device of claim 5 further comprises a split nut for purpose of adjusting the stopper to its initial position.